UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,953	02/12/2002	Naoyuki Tokuda	P67089US0	2253

136	7590	01/30/2006	EXAMINER

JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004

EXAMINER
NG, EUNICE

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 December 2005_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-3 and 5-20_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _11-17_ is/are allowed.

6)☒ Claim(s) _1-3, 5-9, and 18-20_ is/are rejected.

7)☒ Claim(s) _10_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 February 2002_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some *   c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1.   An additional Information Disclosure Statement to include pertinent art listed in the

specification has been received. The reference has been thus been considered.

Response to Amendment

2.   In response to the Office Action mailed Aug. 11, 2005, Applicants have submitted an

Amendment, filed Dec. 12, 2005, canceling claim 4, amending claims 1-3 and 5-7, and adding

claims 11-20, without adding new matter, and arguing to traverse claim rejections.

3.   Upon reconsideration of the references used, the indication of Allowable Subject Matter

for claims 4-7 has been withdrawn.

Response to Arguments

4.   Applicant's arguments with respect to claims 1-3, 5-7, and 11-20, have been considered

but are moot in view of the new grounds of rejection, next.

Claim Rejections - 35 USC

5.   The text of those sections of Title 35, U.S. Code not included in this action can be found

in the previous Office Action.

Claim Rejections - 35 USC § 103

6.   Claims 1-3, 5-7, and 18-20, are rejected under 35 U.S.C. 103(a) as being unpatentable

over Hargrave, III et al., US Patent No. 6,131,082 (filed Jun. 7, 1995), in view of Landauer et al.,

US Patent No. 5,301,109 (filed Jul. 17, 1991).

Regarding claim 1, Hargrave, III et al. disclose a method of setting up and using a

computer-assisted memory translation scheme for translating a sentence between two languages

(see column 1, lines 11-14 and column 5, lines 11-16) comprising the steps of:

constructing a template database having a plurality of document vectors, respectively (see

Table 4 in column 11 which represents the data included in each text segment vector (an n-gram

or word along with weight values) and also "may be organized in database files in any

convenient manner," synonymous with a template database);

matching the sentence to a subset of said plurality of templates having a closest similarity

to said sentence in said latent semantic space (see lines 2-7 in column 5, describing the use of a

similarity function for the vectors associated with a source language text string and target

language text string, which generates a ranking of possible matches for the most similar text

segments);

selecting, from said subset, a set of items having a heaviest weighted common

subsequence between said sentence and said subset of templates (see column 14, lines 9-15,

which describes grouping text segments having the highest score and sorted so that the most

similar documents are retrieved first, synonymous with the idea of selecting, from a subset, a set

of items having a heaviest weighted common subsequence after ranking); and

selecting, from the set of items, a template closest to a meaning of said sentence (see

column 14, lines 16-18, describing a score given to the degree of matching between a query

vector and a text segment vector, synonymous to a source language template and a target

language template, for the purpose of selecting the template closest to the translation).

Hargrave, III et al. also teach, "assigning normalized latent semantic vectors of the

templates" (see col. 13, lines 55-57, "the use of normalized vectors simplifies the determination

of similarity between the query vector and the text segment vectors of the TM").

Hargrave, III et al. do not, but Landauer et al. teach, "processing text to identify word and

noun phrases" (see col. 13, lines 29-31, "processing step…by parsing the data objects to obtain

selected terms, such as all nouns, verbs, adjectives, and so forth"), and "constructing system

terms by setting up a term list" (see col. 13, line 41, "generation of [a] term database,"

synonymous to setting up a term list).

Landauer et al. do not expressly teach, "and assigning weights to the words within each

template" or "and choosing global weights for the terms on the term list". However, these

features are well known in the art as evidenced by Hargrave, III et al. in col. 10, lines 33-35,

which teaches "[supplying] a weight, normalized for segment length."

It would have been obvious for one of ordinary skill in the art at the time the invention

was made to combine the teaching element of choosing/assigning weights as in Hargrave, III et

al. with that of Landauer et al. because Hargrave, III et al. teaches that "weight normalization is

advantageous to avoid the bias of the longer text segments. One way to do this is to supply a

weight, normalized for segment length." (col. 10, lines 33-34).

Hargrave, III et al. do not, but Landauer et al. teach, "setting up a reduced latent semantic

vector space" (see lines 4-7 of column 7 and lines 58-60 of column 14, describing the method of

decomposing a matrix into reduced singular value representation (which is characterized by

reduced latent semantic space) composed of a distinct term file and a data object file

(synonymous to a source language template and a target language template) to create a reduced

latent semantic vector space);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teaching elements of Hargrave, III et al. with Landauer et al.

Motivation for the combination is to provide a machine assisted translation tool between two

different languages with a faster matching procedure by using vector-based retrieval (see column

5, lines 7-9 of Hargrave, III et al.); using the technique of latent semantic space to represent

documents as sets of words represents them as parameters in such a way that dependencies

between words are taken into account (see column 1, lines 49-52 of Landauer et al.), and

reducing the dimension of the latent vector semantic space has the advantageous property that

small sources of variability in term usage are dropped and only the most important sources kept

(see column 2, lines 27-30 of Landauer et al.).

Regarding claim 2, Hargrave, III et al. disclose a method of setting up and using a

computer-assisted memory translation scheme for translating a sentence between a source

language and a target language (see column 1, lines 11-14 and column 5, lines 11-16) comprising

the steps of:

setting up a translation memory system (see column 4, lines 56-57) with a plurality of

templates (see Table 4 in column 11, representing the data included in each text segment vector

(an n-gram or word along with weight values) which "may be organized in database files in any

convenient manner," synonymous with a template database); and

performing a translation process using said translation memory system and a

determination of common subsequences between the sentence and the plurality of templates (see

lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a

source language text string and target language text string, which generates a ranking of possible

matches for the most similar text segments);

But Hargrave, III et al. fail to teach "using reduced latent semantic vector space."

However, this is well known in the art as evidenced by Landauer et al., which disclose a

computer information retrieval using latent semantic structure comprising:

using reduced latent semantic vector space (see lines 4-7 of column 7 and lines 58-60 of

column 14, describing the method of decomposing a matrix into reduced singular value

representation (which is characterized by reduced latent semantic space) composed of a distinct

term file and a data object file (synonymous to a source language template and a target language

template) to create a reduced latent semantic vector space);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teaching elements of Hargrave, III et al. with Landauer et al.

Motivation for the combination is to provide a machine assisted translation tool between two

different languages with a faster matching procedure by using vector-based retrieval (see column 5, lines 7-9 of Hargrave, III et al.); using the technique of latent semantic space to represent documents as sets of words represents them as parameters in such a way that dependencies between words are taken into account (see column 1, lines 49-52 of Landauer et al.), and reducing the dimension of the latent vector semantic space has the advantageous property that small sources of variability in term usage are dropped and only the most important sources kept (see column 2, lines 27-30 of Landauer et al.).

The rest of the limitations of claim 2 are the same as or similar to those of claim 1, rejected above, and thus are rejected for the same reasons.

Regarding claim 3, the primary reference Hargrave, III et al. disclose the step of performing a translation process including:

finding a subset of templates having closest similarity to the sentence based on a similarity measurement of the reduced latent semantic vector space (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

selecting, from said subset, a set of items having a heaviest weighted common subsequence between said sentence and said subset of templates (see column 14, lines 9-15, which describes grouping text segments having the highest score and sorted so that the most similar documents are retrieved first, synonymous with the idea of selecting, from a subset, a set of items having a heaviest weighted common subsequence after ranking); and

selecting, from the set of items, a template closest to said sentence as a sentence

translation (see column 14, lines 16-18, describing a score given to the degree of matching

between a query vector and a text segment vector, synonymous to a source language template

and a target language template, for the purpose of selecting the template closest to the

translation).

Regarding claims 5 and 18, both Hargrave, III and Landauer et al. do not explicitly teach

"wherein said global weights are set to '1' by default." However, the Examiner takes Official

Notice that it is old and well known in the art to set global weights to '1' by default, since a

weight of '1' would be equivalent to no weight at all. Therefore, it would have been obvious for

one of ordinary skill at the time of invention to include a default value of '1' because the

appropriate weight value would probably not be known ahead of time, and using a value of '1'

would leave everything unchanged.

Regarding claims 6 and 19, Hargrave, III et al. teach, "wherein said global weights are set

up using one of uniform weighting, domain specific weighting and entropy weighting" (see col.

7, lines 55-58).

Regarding claims 7 and 20, Hargrave, III et al. do not, but Landauer et al. teach, "wherein

the step of setting up a reduced latent semantic vector space is performed using a singular value

decomposition algorithm" (see col. 4, lines 58-61).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Hargrave, III et al. to include that of Landauer et al. because Landauer et al. teaches that singular value decomposition can be used to "approximate the original matrix in terms of a much smaller number of orthogonal dimensions" (col. 4, lines 60-61) which is important because "if the number of dimensions is too large, random noise or variation in word usage will be modeled...too small, significant semantic content will remain uncaptured" (col. 4, line 65 – col. 5, line 2).

7.   Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hargrave, III et al. and Landauer et al. as applied to claims 1-3, above, and further in view of Kuno et al., US Patent No. 6,760,695 (filed Jun. 17, 1996).

Regarding claim 8, while Hargrave, III et al. and Landauer et al. teach all the limitations of claim 2 and 3, they fail to teach the method including the option of editing the templates. However, this feature is well known in the art as evidenced by Kuno et al., which disclose a method as set forth in claim 3, further comprising:

the step of editing the templates in both the source and target languages to reflect the sentence translation and improve the database (the notion is described in column 2, lines 8-14, allowing the user to interface with the system to edit the displayed translation, similar to allowing the user to edit the templates).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that including a feature for editing the templates would provide a more productive translation system and would save the time and tedium of considering potentially large numbers

of incorrect, but highly ranked translations (see column 2, lines 15-24). In addition, saving these

templates would greatly enhance the speed of operation of the method and translation memory

(as described in column 9, lines 59-62, describing the saving of the aligned pairs of source

language and target language text segments). It is for these reasons that one of ordinary skill in

the art would have been motivated to implement the editing feature in translation scheme by

modifying the teaching elements of Hargrave, III et al. and Landauer et al. with those of Kuno et

al.

Regarding claim 9, Hargrave, III et al. also teaches further comprising, "the step of

determining a total weight of that portion of the template including the heaviest weighted

common subsequence" (see column 14, lines 1-5, which describes an array that accumulates a

score representing the similarity between the query vector and each of the text segment vectors,

determining the total weight of a portion of a subsequence including the heaviest common

subsequence).

Kuno et al. also teach this in col. 14, lines 15-30, which discuss and illustrate determining

'heavy', 'heavier', and 'light' elements, suggesting determination of a total weight, including the

heaviest weighted common subsequence).

It would have been obvious for one of ordinary skill in the art at the time the invention

was made to modify the teaching elements of Hargrave, III and Landauer et al. with that of Kuno

et al. because Kuno et al. teach that "structural balance...is based on a characteristic of English

and many other European languages pertaining to the lengths of constituents in a given sentence"

and "in some...constructions, sentences which involve heavy (lengthy) elements to the left of

light elements are disliked in these languages" (col. 14 lines 15-19). Therefore, the

determination of a weight of certain portions can help determine the correct sentence structure.

Allowable Subject Matter

8.   Claim 10 is objected to as being dependent upon a rejected base claim, but would be

allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims.

9.   The following is a statement of reasons for the indication of allowable subject matter for

claim 10:

Claim 10 includes a limitation that has been found to be the same as or similar to that of

prior art, but also contains further limitations for which no prior art has been found which reads

on or suggests what is claimed.

Claim 10 recites the step of selecting a template comprising the step of:

choosing a syntactically valid path in a target language template (Kuno et al., col. 14,

lines 20-30 show determining "acceptable" and "unacceptable" sentence constructions,

synonymous to the idea of choosing a syntactically valid path);

However, none of Hargrave, III, Landauer, or Kuno et al., the closest prior art found,

teach, or suggest the steps of:

registering the sentence into source language template, t, by combining each pair of

matched terms into a proper template node to obtain a new source language template structure t_x;

if the path chosen is a correct translation of the sentence, editing template t_x so that each

path of template t_x represents a correct sentence having a same meaning as the sentence, and

replacing the template t in the database with the new template t_x; and

if the path chosen is not a correct translation of the sentence, obtaining a new target

language template structure t_y so that each path of t_y is a correct translation of the sentence,

editing t_x so that each path of t_x represents a correct sentence having a same meaning as the

sentence, and adding together t_y and t_x and inserting the sum as a new item in the database.

10.   Claims 11-17 are allowed.

11.   The following is an examiner's statement of reasons for allowance for claims 11-17:

Claim 11 comprises all the limitations of claim 10, which were given an indication of

allowable subject matter, above, and thus is allowable for the same reasons.

Claims 12-17 are dependent on allowable base claim, claim 11, and thus contains

allowable subject matter as well.

Conclusion

12.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Eunice Ng whose telephone number is 571-272-2854. The

examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

en
Jan. 10, 2006

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER